

a first layer of organic polymer deposited contiguous to the first transparent layer.

- C1
Cont'd
40. (Amended) An electronic display structure comprising:
a display comprising a plastic substrate;
a first layer of organic polymer deposited over the substrate; and
a first transparent layer of conductive barrier material deposited contiguous to the first organic polymer layer, the conductive barrier material comprising a conductive oxide, metal or metal nitride.
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- C2
50. (Amended) A process for fabricating a composite structure comprising:
providing a substrate;
depositing a first transparent layer of conductive barrier material over the substrate, the conductive barrier material comprising a conductive oxide, metal or metal nitride; and
depositing a first organic polymer layer contiguous to the first transparent layer;
wherein said composite structure comprises a display.
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73. (Amended) The display structure of claim 39 wherein the display is between two dyads each comprising a layer of organic polymer material contiguous to a layer of conductive barrier material.

- C3
74. (Amended) The display structure of claim 73 further comprising one or more additional dyads comprising an additional transparent layer of conductive barrier material and a transparent layer comprising an organic polymer, a dielectric, a metal or a conductive oxide.

75. (Amended) The display structure of claim 40 wherein the display is between two dyads each comprising a layer of organic polymer material contiguous to a layer of conductive barrier material.

13
Cancel

76. (Amended) The display structure of claim 75 further comprising one or more additional dyads comprising an additional transparent layer of conductive barrier material and a transparent layer comprising an organic polymer, a dielectric, a metal or a conductive oxide.

Please cancel claims ~~41 - 49~~, ~~51 - 72~~, ~~77~~ and ~~78~~ without prejudice.

Please add the following new claims 79 - 145:

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79. (New) An electronic device on a plastic substrate, coated with a composite barrier comprising one or more layers of transparent conductive oxide and one or more layers of organic polymer.

80. (New) A device according to claim 79 wherein the transparent conductive oxide comprises an indium tin oxide.

81. (New) A device according to claim 79 wherein the organic polymer comprises an acrylic hardcoat.

82. (New) A device according to claim 79 wherein the composite barrier achieves at least about 50 ohms/square and 85% visible transmittance.

83. (New) A device according to claim 79 wherein the device comprises a light emissive device.

84. (New) An electronic device on a substrate, comprising a water vapor-resistant barrier over at least one of the substrate or device, the barrier comprising in either order (a) a layer of transparent conductive barrier material comprising conductive oxide, metal or conductive metal nitride and (b) a layer of organic polymer.

85. (New) A device according to claim 84 wherein the layer of transparent conductive barrier material is between the substrate or device and the layer of organic polymer.

86. (New) A device according to claim 84 wherein the layer of organic polymer is between the substrate or device and the layer of transparent conductive barrier material.
87. (New) A device according to claim 84 wherein the layer of transparent conductive barrier material is amorphous.
88. (New) A device according to claim 84 wherein the transparent conductive barrier material is a conductive oxide.
89. (New) A device according to claim 84 wherein the transparent conductive barrier material comprises tin doped indium oxide.
90. (New) A device according to claim 84 wherein the transparent conductive barrier material comprises a cadmium oxide, tin oxide, indium oxide, zinc oxide or magnesium oxide.
91. (New) A device according to claim 84 wherein the layer of transparent conductive barrier material comprises an optically enhanced three layer configuration comprising layers of metal oxide or transparent conductive oxide; metal or metal nitride; and metal oxide or transparent conductive oxide.
92. (New) A device according to claim 84 wherein the organic polymer is crosslinked.
93. (New) A device according to claim 84 further comprising a hardcoat layer.
94. (New) A device according to claim 84 comprising a layer of transparent conductive barrier material between the substrate and the device.
95. (New) A device according to claim 84 wherein the barrier comprises (a) a first layer of organic polymer over the substrate or device, (b) a first layer of transparent conductive

barrier material over the first layer of organic polymer and (c) a second layer of organic polymer over the first layer of transparent conductive barrier material.

96. (New) A device according to claim 95 wherein the first and second layers of organic polymer are crosslinked.

97. (New) A device according to claim 95 further comprising one or more pairs of a layer of transparent conductive barrier material and a layer of organic polymer, over the second layer of organic polymer.

98. (New) A device according to claim 84 further comprising at least one layer of transparent dielectric material.

99. (New) A device according to claim 84 comprising multiple pairs of layers of transparent barrier material and organic polymer wherein at least one of the layers of transparent barrier material comprises a dielectric material.

100. (New) A device according to claim 99 wherein the device has at least two sides and there is at least one pair of layers of transparent barrier material and organic polymer on each side of the device.

101. (New) A device according to claim 84 comprising one or more metal layers between metal nitride layers.

102. (New) A device according to claim 84 wherein the device comprises a plastic flat panel display.

103. (New) A device according to claim 84 wherein the device comprises a liquid crystal display.

104. (New) A device according to claim 84 wherein the device comprises a light emitting device.

105. (New) A device according to claim 84 wherein the device comprises an organic light emitting device.

106. (New) A device according to claim 84 wherein the device comprises a field emission device.

107. (New) A device according to claim 84 wherein the device comprises an electroluminescent device.

108. (New) A device according to claim 84 wherein the substrate comprises plastic.

109. (New) A device according to claim 84 wherein the device comprises a flexible display.

110. (New) A device according to claim 84 having an oxygen permeability less than about $0.01 \text{ cc/m}^2 \cdot \text{day}$ and a water vapor permeability less than about $0.01 \text{ g/m}^2 \cdot \text{day}$.

111. (New) A device according to claim 84 having an oxygen permeability less than about $0.001 \text{ cc/m}^2 \cdot \text{day}$ and a water vapor permeability less than about $0.001 \text{ g/m}^2 \cdot \text{day}$.

112. (New) A device according to claim 84 wherein the barrier excludes moisture and atmospheric gases that chemically degrade the performance of the device.

113. (New) A device according to claim 84 wherein the barrier has low enough resistivity to function as an electrode for the device.

114. (New) A device according to claim 84 comprising a plurality of electrodes of the transparent conductive barrier material.

115. (New) A process for fabricating an oxygen- and water vapor-resistant electronic device comprising:

- a) providing an electronic device on a substrate; and
- b) depositing over the substrate or device a barrier comprising in either order (i) a coating comprising organic material and (ii) a coating comprising transparent conductive barrier material comprising conductive oxide, metal or conductive metal nitride.

116. (New) A process according to claim 115 wherein the coating comprising transparent conductive barrier material is deposited before the coating comprising organic material.

117. (New) A process according to claim 115 wherein the coating comprising organic material is deposited before the coating comprising transparent conductive barrier material.

118. (New) A process according to claim 115 wherein the transparent conductive barrier material is amorphous.

119. (New) A process according to claim 115 wherein the transparent conductive barrier material is a conductive oxide.

120. (New) A process according to claim 115 wherein the transparent conductive barrier material comprises tin doped indium oxide.

121. (New) A process according to claim 115 wherein the transparent conductive barrier material comprises a cadmium oxide, tin oxide, indium oxide, zinc oxide or magnesium oxide.

122. (New) A process according to claim 115 wherein the coating comprising transparent conductive barrier material is deposited as an optically enhanced three layer configuration comprising coatings of metal oxide or transparent conductive oxide; metal or metal nitride; and metal oxide or transparent conductive oxide.

123. (New) A process according to claim 115 wherein the coating comprising organic material is deposited as a monomer and crosslinked to form an organic polymer.

124. (New) A process according to claim 115 further comprising depositing a hardcoat on the substrate, device or previously deposited coatings.

125. (New) A process according to claim 115 comprising depositing a coating comprising transparent conductive barrier material so that the coating is between the substrate and the device.

126. (New) A process according to claim 115 comprising depositing (i) a first coating comprising organic material over the substrate or device, (ii) a first coating comprising transparent conductive barrier material over the first coating comprising organic material and (iii) a second coating comprising organic material over the first coating comprising transparent conductive barrier material.

127. (New) A process according to claim 126 wherein the first and second coatings comprising organic material are deposited as monomers and crosslinked to form organic polymers.

128. (New) A process according to claim 126 comprising depositing one or more pairs of a coating comprising transparent conductive barrier material and a coating comprising organic material, over the second coating comprising organic material.

129. (New) A process according to claim 115 further comprising depositing at least one coating comprising transparent dielectric material.

130. (New) A process according to claim 115 comprising depositing multiple pairs of a coating comprising transparent barrier material and a coating comprising organic material wherein the transparent barrier material of at least one of the pairs comprises a dielectric material.

131. (New) A process according to claim 130 wherein the device has at least two sides and at least one such pair is deposited on each side of the device.

132. (New) A process according to claim 115 wherein at least one coating comprising metal is deposited between coatings comprising metal nitride.

133. (New) A process according to claim 115 wherein the device comprises a plastic flat panel display.

134. (New) A process according to claim 115 wherein the device comprises a liquid crystal display.

135. (New) A process according to claim 115 wherein the device comprises a light emitting device.

136. (New) A process according to claim 115 wherein the device comprises an organic light emitting device.

137. (New) A process according to claim 115 wherein the device comprises a field emission device.

138. (New) A process according to claim 115 wherein the device comprises an electroluminescent device.

139. (New) A process according to claim 115 wherein the substrate comprises plastic.

140. (New) A process according to claim 115 wherein the device comprises a flexible display.

141. (New) A process according to claim 115 wherein the device has an oxygen permeability less than about $0.01 \text{ cc/m}^2\cdot\text{day}$ and a water vapor permeability less than about $0.01 \text{ g/m}^2\cdot\text{day}$.

142. (New) A process according to claim 115 wherein the device has an oxygen permeability less than about $0.001 \text{ cc/m}^2\cdot\text{day}$ and a water vapor permeability less than about $0.001 \text{ g/m}^2\cdot\text{day}$.

143. (New) A process according to claim 115 wherein the barrier excludes moisture and atmospheric gases that chemically degrade the performance of the device.

144. (New) A process according to claim 115 wherein the barrier has low enough resistivity to function as an electrode for the device.

145. (New) A process according to claim 115 comprising depositing a plurality of electrodes comprising the transparent conductive barrier material.